

REMARKS

By this Amendment, Applicants have amended claims 1 and 11. No new matter has been added. Claims 1-16 are pending in the application.

As an initial matter, Applicants would like to thank Examiner Swenson for the courtesy and consideration extended to Applicants' representative during the telephone interview conducted on August 9, 2004. During the interview, the following issues were discussed.

In the Office Action, the Examiner rejected claims 1, 7, 8, 11, 13, and 15 under 35 U.S.C. § 102(b) as being anticipated by Nishimura (U.S. Patent No. 5,695,020); rejected claims 2-6, 9, 12, and 16 under 35 U.S.C. § 103(a) as being unpatentable over Nishimura; and indicated that claims 10 and 14 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicants have amended independent claims 1 and 11, the only independent claims pending in the application, thereby obviating the § 102(b) rejection of those claims based on the Nishimura reference. To the extent, however, that the Examiner may consider rejecting amended independent claims 1 and 11 based on the Nishimura reference, Applicants respectfully submit that such rejections would be improper because the Nishimura reference fails to disclose or suggest all of the subject matter recited in amended independent claims 1 and 11. See M.P.E.P. §§ 2131 and 2143.

Applicants' invention as recited in amended independent claim 1 is directed to a compression ignition engine including an electronic controller. The electronic controller produces fuel delivery commands to control power output of the engine, and the electronic controller includes a cruise control mode. The compression ignition engine

further includes an advanced cruise control system connected with the electronic controller and which produces communication signals. The electronic controller receives the communication signals and calculates a fuel delivery command based, at least in part, on the communication signals at least when the electronic controller is in an advanced cruise control mode. The electronic controller also disengages the advanced cruise control mode in response to receiving no valid communication signal from the advanced cruise control system for greater than a first period of time, and the absence of a valid communication signal for the first period of time is indicative of a signal fault or failure between the advanced cruise control system and the electronic controller.

As distinguished from Applicants' amended independent claim 1, the Nishimura reference does not disclose or suggest at least a compression ignition system including an electronic controller that disengages an advanced cruise control mode in response to receiving no valid communication signal from an advanced cruise control system for greater than a first period of time, wherein the absence of a valid communication signal for the first period of time is indicative of a signal fault or failure between the advanced cruise control system and the electronic controller. Accordingly, Applicants' amended independent claim 1 should be patentably distinguishable from the Nishimura reference.

The Nishimura reference discloses a cruise control apparatus for a vehicle including a distance-based control and a speed-based control. Col. 1, lines 5-9. The Nishimura apparatus includes a control unit 20 for executing control of the system and a distance sensor 10 for detecting the distance between the controlled vehicle and a vehicle positioned ahead of the controlled vehicle. Col. 5, lines 2-42. The Nishimura distance sensor 10 determines the vehicle interval distance by emitting a light or sonic

wave signal toward the vehicle ahead and by receiving the corresponding return wave signal that is reflected by the vehicle ahead. Col. 18, lines 7-17. During certain anticipated conditions, for example, during rain or excessive pitch motion of the controlled vehicle, the distance sensor's emitted wave signal may not reach the vehicle ahead and will therefore not be reflected back to the distance sensor. Id. As a result, the return wave signal is "missed" by the distance sensor, and a "signal missing" state is determined. Col. 18, lines 18-20. In anticipation of this predicted circumstance, the Nishimura apparatus provides a system for interpreting and managing "missed" return wave signals. Col. 18, lines 28-46. The Nishimura reference, however, does not disclose or suggest "disengage[ing] said advanced cruise control mode in response to receiving no valid communication signals from said advanced cruise control system for greater than a first period of time, wherein the absence of a valid communication signal for the first period of time is indicative of a signal fault or failure between the advanced cruise control system and the electronic controller," as recited in Applicants' amended independent claim 1.

In particular, the Nishimura "missing" and "deteriorated" signal conditions indicate either that the distance sensor reading indicates an infinite or excessive distance between the controlled vehicle and the vehicle ahead (part of normal Nishimura's operation), or that return wave signals have been "missed" in a greater number of instances than a predetermined ratio, such as during rainy conditions. Col. 18, lines 47-57; col. 19, lines 62-67; col. 20, lines 1-22. All of these signals sent from the distance sensor to the controller are anticipated and valid signals that are recognizable and accounted for by the Nishimura controller's algorithm for controlling the controlled vehicle. In other words, the detection of "missed" signals and the deterioration" of

distance sensor function due to rain or excessive vehicle pitch motion are normal, predicted conditions that are anticipated to occur regularly during use of the Nishimura system. Hence, these conditions render valid communications signals that the Nishimura apparatus anticipates receiving and manipulating in order to operate the cruise control system. In contrast with Applicants' claims invention, however, they are not unanticipated communications malfunctions or disruptions between components, which may be caused for example, by faulty wiring. When such unanticipated communications are received by the electronic controller from the advanced cruise control, such as by virtue of faulty wiring, unpredictable results may occur.

Applicants respectfully note that Applicants' originally-filed disclosure recites a number exemplary distinctions between valid communications, such as those indicating the absence of a vehicle ahead, and invalid communications, such as those caused by faulty wiring. For example, paragraph [05] recites, "Oftentimes the advanced cruise control systems and the engine control systems are manufactured by different companies. It is therefore important to have a standard communication format to permit these devices to communicate with various engine manufacturer's engine controllers." The specification further recites in paragraph [07] that "[a]lthough the data bus communications standards set forth in J1939 work satisfactorily, there are instances when too much data or noise on the bus, among other reasons, prevents the engine controller from receiving a particular data transmission, or causes the data to be corrupted." And in paragraph [20], the specification recites

Those skilled the art will recognize that there are many different kinds of signal validation techniques for digital communications such as those transmitted over the

preferred data bus 50 . . . , any of which could be used to verify that the transmitted signal has not been compromised by noise on the data bus 50, data collisions that may occur when two different devices attempt to transmit data on the bus at almost the same time, or other known causes of distorting the data.

Paragraph [24] further explains that “the absence of a valid signal between the advanced cruise control system 80 and the ECM 40 generally indicates there is a communication failure or serious defect in the communication between those devices.” And in paragraph [26], the specification explains that “[i]f the communication error continues for a time greater than t_2 , then a communication failure likely exists, for example a bad connection between components or faulty wiring”

The above-recited passages provide examples of how invalid communications signals are distinguishable from the valid communications signals disclosed in the Nishimura reference. At least because the Nishimura reference fails to even mention invalid signals and/or how to identify signals as being invalid signals, Applicants respectfully submit that Applicants' amended independent claim 1 is patentably distinguishable from the Nishimura reference.

As noted previously herein, amended independent claim 11 is the only other independent claim pending in this application. Applicants' invention as recited in amended independent claim 11 is directed to a method of controlling a compression ignition engine equipped with an electronic controller and an advanced cruise control system. The method includes receiving communication signals from the advanced

cruise control system, and disengaging the advanced cruise control system as a function of not receiving one or more valid communication signals from the advanced cruise control system for a first time period, wherein the absence of one or more valid communication signals for the first period of time is indicative of a signal fault or failure between the advanced cruise control system and the electronic controller.

For at least reasons similar to those outlined above with respect to claim 1, Applicants' amended independent claim 11 should be patentably distinguishable from the Nishimura reference.

Conclusions

As outlined above, amended independent claims 1 and 11 should be allowable. Dependent claims 2-10 and 12-16 depend from amended independent claims 1 and 11, respectively. Consequently, those dependent claims should be allowable for at least the same reasons amended independent claims 1 and 11 are allowable as well as by virtue of their recitations of additional novel and non-obvious subject matter.

Applicants respectfully request the reconsideration of this application, the withdrawal of the outstanding claim rejections, and the allowance of claims 1-16.

If the Examiner believes that a telephone conversation might advance prosecution, the Examiner is cordially invited to call Applicants' undersigned attorney at 571-203-2739.

Applicants respectfully submit that the Office Action contains a number of assertions concerning the related art and the claims. Regardless of whether those assertions are addressed specifically herein, Applicants respectfully decline to automatically subscribe to them.

Please grant any extensions of time required to enter this response and charge any additional required fees to our Deposit Account No. 6-0916.

Respectfully submitted,

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